

RESEARCH ARTICLES

Factors Influencing Pharmacy Students' Choice of Major and Its Relationship to Anticipatory Socialization

Flora Keshishian, PhD

St. John's College of Liberal Arts and Sciences, St. John's University

Submitted April 17, 2009; accepted September 20, 2009; published May 12, 2010.

Objectives. To determine factors that influenced students' choice of pharmacy as a major and assess relationships between these factors and anticipatory socialization.

Methods. Two hundred fifteen freshman and sophomore students enrolled in a 0-6 doctor of pharmacy program completed a survey instrument on which they rated 6 motivational factors in their decision to major in pharmacy and answered questions related to anticipatory socialization. Bivariate and multivariate analyses were used to answer the research questions posed.

Results. Female students ranked desire to help others as a stronger motivating factor in their decision to pursue a career in pharmacy than did male students. Caucasian students rated providing more career opportunities and providing an entry-level doctorate as stronger motivating factors for pursuing pharmacy than did Asian students. Asian students had lower levels of anticipatory socialization than other students. Students with higher levels of motivation had higher levels of anticipatory socialization.

Conclusion. Results of this study provide further insight into effective recruiting strategies and recommendations for improved pharmacy education.

Keywords: anticipatory socialization, motivating factors, pharmacy students

INTRODUCTION

A variety of factors influence students' choice of pharmacy as a major including interest in science, desire to earn a high salary, desire to help people, desire for job and/or economic security, desire to have a prestigious career, influence of certain individuals (eg, a family member, pharmacist, relative, friend, guidance counselor), and inability to get into medical school (ie, pharmacy was their second choice).¹⁻¹⁰ However, these choices may be made without much knowledge or consideration of what constitutes a career in pharmacy.

Regardless of what motivates students to major in pharmacy, once they choose the major, they are on a path to becoming professionals. They do so through professional socialization, which refers to the "process by which people selectively acquire the values and attitudes, the interests, the skills and knowledge—in short, the culture—current in the groups of which they are, or seek to become a member."¹¹ Pharmacy students are expected to develop professional ethos, or philosophy of the profession, including moral, ethical, and caring behaviors. Like other professions, phar-

macy has its own norms and values for professionalism including: knowledge and skills of the profession, commitment to self-improvement, service orientation, pride in the profession, covenant to care for patients, creativity, conscience and trustworthiness, accountability for one's work, ethically sound decision making, and leadership.^{12,13}

Pharmacy students learn about these traits mostly during the "pre-arrival" stage through a process known as *anticipatory socialization*, which refers to the entire learning and knowledge intake that prepares the individual for becoming a professional.¹⁴⁻¹⁷ The 2 primary phases in anticipatory socialization are "*realism*, the extent to which the individual has a full and accurate picture of what life in the organization is really like, indicates how successfully the individual has completed the information shaping and information evaluation part of his recruitment"; and "*congruence*, the extent to which the organization's resources and individual needs and skills are mutually satisfying, indicates how successfully the individual has been making a decision about employment."¹⁸

The purpose of this study was to determine motivating factors that influence students' choice of pharmacy as a major and investigate the association between these motivations and students' anticipatory socialization. Anticipatory socialization refers to an informal process of enculturation into a profession which may have important implications

Corresponding Author: Flora Keshishian, PhD, Department of Rhetoric, Communication and Theatre, St. John's University, 8000 Utopia Parkway, Queens, NY 11439.
E-mail: keshishf@stjohns.edu

for professional socialization. This study defines anticipatory socialization as *the extent to which students are familiar with their majors, their careers, the relationship between their major and their career, and their confidence in reaching their career goals*. This study answered the following questions: (1) How do student background factors influence their choice of pharmacy as an academic major? (2) How do student background factors influence their anticipatory socialization? (3) How are student motivations influenced by their anticipatory socialization?

METHODS

This study is based on a data set from a larger survey that investigated factors, motivations, and nonacademic influences that affect the choice of major in pharmacy vs. non-pharmacy students.¹⁹ The study was conducted at a major urban Catholic university with over 20,000 students, which draws its student population from one of the most culturally diverse areas in the United States.²⁰ The pharmacy degree at the University is configured as a 0-6 program. The survey sample consisted of 215 freshman and sophomore pharmacy students who were enrolled in the required course Interpersonal Communication for the Pharmacist, which all pharmacy students routinely take during either freshman or sophomore year.

The instrument used in the study consisted of 72 questions divided into 8 sections. Anticipatory socialization was measured using 4 questions: “How familiar are you with your intended career choice?” “How familiar are you with your intended major?” “How important is your major to your career?” “How confident are you reaching your career goals?”

Because the responses to the first 3 questions were based on a 4-point Likert scale and the fourth question was based on a 3-point Likert scale, the variables were standardized before conducting any analyses. After standardization, items were summed into an anticipatory socialization scale, which achieved a coefficient alpha of 0.65.

Pharmacy students were asked to rate their level of agreement with 6 common motivating factors for choosing pharmacy as a major on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree). Motivation items included (1) “I had a better chance to being accepted in pharmacy than medicine” (2) “I cannot see myself pursuing postgraduate education (ie, medical, doctoral, PhD)” (3) “It will provide me with an entry level doctoral degree”; (4) “I want to have many career opportunities”; (5) “I want to find a cure for a chronic disease”; and (6) “I love helping others.” Because these items assessed qualitatively different motivations, they were treated as discrete entities in the data analysis.

RESULTS

Two hundred fifteen pharmacy majors participated in the study. Asian students constituted the majority of the participants (56.3%), followed by Caucasian/white (25.6%), and others (18.1%), which included students identifying themselves as African American or Hispanic/Latino. Slightly more females (54.4%) participated in the study than males (43.3%); 2.3% were nonrespondents on gender. Demographic data are presented in Table 1.

Because the 6 motivational factors were at the ordinal level of measurement, nonparametric statistics were used. First, a Friedman test determined there was significant differences among the 6 motivators ($p < 0.01$). As a consequence, paired comparisons were computed among all pairs using the Wilcoxon signed rank test. Table 2 contains the descriptive statistics and z scores for each item and the next highly endorsed item.

The most highly endorsed reason for pursuing a pharmacy degree was to have many career opportunities. Students rated having many career opportunities significantly higher than the second-ranked reason, which was helping others ($p < 0.01$). There was no significant difference between the second-ranked reason and the third-ranked reason, providing an entry-level doctoral degree. However, this was rated significantly higher than the fourth-ranked motivator, wanting to find a cure for chronic disease ($p < 0.01$). That reason was rated significantly higher than the fifth-rated motivator, perceiving a better chance of being accepted into pharmacy school than medical school ($p < 0.05$), which was in turn ranked significantly higher than the lowest ranking motivator, not wanting to pursue a post-graduate degree ($p < 0.05$).

Table 3 contains the rating of motivating factors by gender. No significant differences between male and female students were found on 5 of the 6 motivators. Only the desire to help others separated the genders, with female students rating that motivating factor higher than male students ($p < 0.01$).

Table 1. Demographics of Students Who Participated in a Study of Motivating Factors Influencing the Choice of Pharmacy as a Major (N = 215)

Variable	No. (%)
Racial/Ethnic Background	
Asian	121 (56.3)
Caucasian/White	55 (25.6)
Other	39 (18.1)
Gender (n = 210) ^a	
Female	117 (54.4)
Male	93 (43.3)

^a Five participants did not respond to the gender question. Only 210 participants responded to this item.

Table 2. Motivations of Pharmacy Students Who Participated in a Study of Factors Influencing the Choice of Pharmacy as a Major

Motivation	Descriptive Statistics,		Wilcoxon z-Score With Next	P
	Mean (SD) ^a			
Want many career opportunities	4.3 (0.8)		2.61	0.01
Love helping others	4.1 (0.9)		1.07	0.32
Provide entry-level doctoral degree	4 (1)		6.86	<0.01
Want to find a cure for chronic disease	3.2 (1.2)		2.11	0.03
Better chance of being accepted in pharmacy than medicine	2.9 (1.5)		2.12	0.04
Do not want to pursue postgraduate degree	2.7 (1.4)			

^a Rating scale for motivation items was from 1 = strongly disagree to 5 = strongly agree.

Table 4 contains the rating of the 6 motivators by students according to their racial/ethnic background. Kruskal-Wallis tests were used to compare differences and pairwise differences were conducted using the Wilcoxon signed rank test. Caucasian/white students rated their level of agreement with 2 of the motivators, provide an entry-level doctoral degree and provide many career opportunities, significantly higher ($p < 0.05$ and $p < 0.01$, respectively) than did Asian students.

No differences in anticipatory socialization were found between male and female students; however, differences were found among students of different racial/ethnic backgrounds, with Asian students having lower levels of anticipatory socialization than others ($p < 0.01$; Tables 5 and 6). Anticipatory socialization then was correlated with the 6 motivational variables using a two-step multiple regression analysis. Because differences in anticipatory socialization had been found between Asian students and the other 2 ethnic/racial categories, the sample was divided into 2 groups: Asian and non-Asian. Ethnic differences were entered into the first step of the regression analysis. Asian ethnicity accounted for 10% of the variance in the first step in the equation ($p < 0.01$), and the 6 motivational variables accounted for an additional 9% of the variance ($p < 0.05$). These findings also indicate that Asian students tended to have lower levels of anticipatory socialization than non-Asian students. In addition, respondents who

were more motivated to become pharmacy students tended to have higher levels of anticipatory socialization than students who were less motivated. The desire to have many career opportunities ($p < 0.05$) and loving to help others ($p < 0.05$) independently contributed a significant proportion of the variance in anticipatory socialization. That is, students who were motivated to pursue a pharmacy major by both career opportunities and helping others tended to have higher levels of anticipatory socialization than students who were motivated by other aspects of majoring in pharmacy.

DISCUSSION

Pharmacy students had a mixture of pragmatic and personal motivations for selecting pharmacy as a major. Career opportunities constitute the most highly endorsed motivation, and this was seen to a greater extent among Caucasian/white students than Asian students. Students often choose pharmacy as a major for employment opportunities or pragmatic reasons,^{2-4,7-10} and this is not unique to pharmacy majors as most US students, regardless of geographic location or discipline chosen, go to college to improve their financial status.²¹ Further, many choose majors that will presumably bring them financial success.²²⁻²⁴ These decisions may be motivated by the high value that the United States tends to place on material success.²⁵ It is important to consider how likely students with this

Table 3. Motivations by Gender of Students Who Participated in a Study of Factors Influencing the Choice of Pharmacy as a Major

Motivation	Female		Male		P
	n	Mean (SD) ^a	n	Mean (SD) ^a	
Better chance of being accepted in pharmacy than medicine	110	2.8 (1.5)	83	3.1 (1.5)	0.19
Do not want to pursue postgraduate degree	113	2.6 (1.4)	89	2.7 (1.4)	0.47
Provide entry-level doctoral degree	113	4 (1.1)	89	4 (1)	0.98
Want many career opportunities	116	4.4 (0.8)	93	4.2 (0.9)	0.10
Want to find a cure for chronic disease	113	3.3 (1.2)	90	3.1 (1.2)	0.11
Love helping others	115	4.3 (1)	93	4 (1)	<0.01

^a Rating scale for motivation items was from 1 = strongly disagree to 5 = strongly agree.

Table 4. Motivations by Racial/Ethnic Background of Students Who Participated in a Study of Factors Influencing Their Choice of Pharmacy as a Major

Motivation	Asian		White		Other		P
	n	Mean (SD) ^a	n	Mean (SD) ^a	n	Mean (SD) ^a	
Better chance of being accepted in pharmacy than medicine	112	3.2 (1.6)	49	2.6 (1.3)	36	2.9 (1.5)	0.10
Do not want to pursue postgraduate degree	117	2.6 (1.3)	52	2.8 (1.4)	37	2.6 (1.6)	0.59
Provide entry-level doctoral degree ^b	115	3.9 (1.1)	53	4.4 (0.7)	38	4.1 (1.1)	0.03
Want many career opportunities ^b	121	4.2 (0.9)	55	4.6 (0.8)	38	4.5 (0.8)	<0.01
Want to find a cure for chronic disease	115	3.3 (1.1)	54	3.2 (1.2)	38	3.2 (1.3)	0.96
Love helping others	120	4.1 (1)	55	4.4 (0.8)	38	4 (1.1)	0.16

^a Rating scale for motivation items was from 1 = strongly disagree to 5 = strongly agree.

^b Pairwise comparisons: white students rated this item higher than Asian students.

motivation are to become effective professionals/be effective in their profession. Pharmacy students must understand that to follow a patient-centered philosophy and provide pharmaceutical care, they must place patient welfare before monetary incentives.^{26,27} The extent to which students' desire for career success in pharmacy school later influences their professional practice could be explored.

Caucasian/white students also seem more inclined than Asian students to select pharmacy for the practical reason that it would provide them with an entry-level doctoral degree. The impact that the availability of US federal loans to US citizens had on the differences in students' motivations by ethnicity/race must also be considered since many of the Asian students in the study were international students and this group's ineligibility for US federal loans may have resulted in the program attracting only those international students who were not motivated primarily by monetary factors.

A desire to help others was the second most highly endorsed motivation by participants in this study and a stronger motivation for female than male students—both of which are findings supported by previous studies.^{3,10} This finding is not surprising, especially because affective behaviors, such as empathy and compassion, have been stereotypically ascribed to women and are also needed in patient-centered pharmacy.²⁸⁻³⁰ The increase in female applicants and decrease in male applicants to pharmacy schools since 1985,³¹ suggests that further studies are needed to examine the influence of gender on choice of pharmacy as a career.

We found Asian students had lower levels of anticipatory socialization than other students, suggesting that this group may enter pharmacy programs without a clear understanding of the skills required to succeed as a pharmacist. The pharmacy students in this study were in their first year of coursework and the majority were Asian. Asians are also the largest non-Caucasian racial/ethnic group among pharmacy students in the United States.³²

Education is a significant part of anticipatory socialization in that it ushers students toward their profession. Professional socialization depends on the collective efforts by pharmacy schools and educators, professionals, and students.¹³ Pharmacy students' image of the profession, their knowledge of the major, and the experience they gain during their professional years all play a key role in their profession. Pharmacy schools should develop an outreach program to help Asian students learn about the requirements for the degree and expectations for a pharmacy career. Orientation sessions can remind students of the significance of their own efforts in adopting the norms and values of the profession.¹³ Web sites or videotapes depicting the pharmacy profession in different settings can be helpful tools as well. Universities are supposed to be learning communities.³³ Because of less experience with informal learning environments, Asian students should be encouraged to participate outside the classroom activities, including symposia, student study groups, bull sessions, and student-faculty get-togethers. These environments are every bit as important in learning about being a member of the pharmaceutical profession as what takes place in the classroom and help to integrate students,

Table 5. Anticipatory Socialization by Gender and Racial/Ethnic Background of Students Who Participated in the Study of Factors Influencing Their Choice of Pharmacy As a Major

	n	Anticipatory Socialization ^a
		Mean (SD)
Gender		
Female	117	-0.04 (2.7)
Male	93	0.05 (2.9)
Racial/ethnic background ^b		
Asian	121	-0.59 (2.8)
White	55	1.37 (2.2)
Other	39	-0.10 (3.1)

^a Anticipatory socialization scale items standardized.

^b p < 0.01, pairwise comparisons: White, Other >Asian.

Table 6. Summary of Linear Multiple Regression Analysis of Anticipatory Socialization on Racial/Ethnic Background and Motivation Variables of Students Who Participated in the Study of Factors Influencing Their Choice of Pharmacy As a Major

Step	Variables Entered	B (SE)	P
1	Asian	-1.78 (0.40)	<0.01
2	Asian	-1.38 (0.41)	<0.01
	Better chance of being accepted in pharmacy than medicine	-0.22 (0.14)	0.16
	Do not want to pursue postgraduate degree	0.05 (0.15)	0.75
	Provide entry-level doctoral degree	-0.20 (0.20)	0.37
	Want many career opportunities	0.66 (0.26)	0.01
	Want to find a cure for chronic disease	0.04 (0.18)	0.54
	Love helping others	0.52 (0.23)	0.06

especially those from immigrant cultures, into the professional culture. Asian students' relative lack of anticipatory socialization suggested by this study indicates that pharmacy schools need to increase their awareness about and sensitivity toward these "collectivistic" cultures, which tend to cherish values such as groupness, interdependence, social harmony, and indirect communication.^{34,25} Increased cultural awareness and sensitivity may help schools and colleges of pharmacy discover more appropriate instruction methods for students from diverse cultures.

Students with higher levels of motivation tended to have higher levels of anticipatory socialization. This is especially true with students who are motivated by career opportunities and the desire to help others. Effective approaches to help socialize pharmacy students into the profession early on include providing role models or mentors, special introductory courses, service-learning opportunities, volunteer work, and/or internships.^{13,35-36}

This study had several limitations. The survey was conducted at a single site; therefore, the findings must be considered preliminary and may be generalized only to other urban settings with a culturally diverse student body. Also, the College of Pharmacy and Allied Health Professions has a 0-6 program and a student population that differs from the majority of pharmacy programs in the country, further limiting the generalizability of the findings. Finally, categorization of students as "Asian" or "Caucasian" fails to recognize the diversity within each group, thus, findings regarding students' motivations based on race/ethnicity may not be repeatable even in a study with a demographically similar population.

CONCLUSION

Students who are looking for career opportunities and those who desire to help others tend to have more knowledge of the profession and confidence in their ability to succeed in a pharmacy career than other students. Anticipatory socialization influences students' motivations, and

students who are career oriented and/or oriented toward helping others tend to have a better idea of the pharmacy profession than other students. There is a need for outreach to and inclusion of Asian students in informal and semi-formal interactions with peers and faculty members within the college/school of pharmacy. More research is needed on students' early knowledge of the profession, motivational factors, and subsequent achievement in pharmacy programs. In addition, research needs to be conducted on the same factors, retention rates, and subsequent achievement among Asian students in pharmacy programs.

ACKNOWLEDGEMENT

The author thanks Joseph M. Brocavich, PharmD, and Joanne M. Carroll, PhD, for their contributions to this study.

REFERENCES

- Burlage HM. Motivating influences to the study of pharmacy. *Am J Pharm Educ.* 1963;27:75-80.
- Pratt R. Analysis of a pilot study of factors that motivate individuals to elect the health sciences as a career, with special reference to pharmacy. *Am J Pharm Educ.* 1965;20:175-190.
- Rascati K. Career choice, plans, and commitment of pharmacy students. *Am J Pharm Educ.* 1989;53(3):228-234.
- Lobb WB, Shah M, Kolassa EM. Factors influencing the selection of a major: A comparison of pharmacy and nonpharmacy undergraduate students. *J Pharm Teach.* 2004;11(2):45-64.
- Willis S, Shannon P, Hassell P. Who will be tomorrow's pharmacists and why did they study pharmacy? *Pharm J.* 2006;277(7410):107-108.
- Anderson DC, Jr, Sheffield MC, Massey Hill A, Cobb HH. Influences on pharmacy students' decision to pursue a doctor of pharmacy degree. *Am J Pharm Educ.* 2008;72(2):Article 22.
- Ferguson JA., Roller L, Wertheimer A I. Social factors motivating students toward a career in pharmacy: An international study. *J Soc Admin Pharm.* 1986;3:127-135.
- Smith MC, Gibson JT, Mikeal RL. Reasons for choosing pharmacy as an occupation. *Drugs Health Care.* 1974;1:89-98.
- Cline RR, Mott DA. Relationship between attitudes, demographics and application decision among pre-pharmacy students: An exploratory investigation. *Am J Pharm Educ.* 1999;63(4):394-401.

American Journal of Pharmaceutical Education 2010; 74 (4) Article 75.

10. Capstick S, Green JA, Beresford R. Choosing a course of study and career in pharmacy—student attitudes and intentions across three years at New Zealand School of Pharmacy. *Pharm Educ.* 2007;7(4):359-373.
11. Merton RK, Reader GG, Kendall PL. *The Student-Physician: Introductory Studies in the Sociology of Medical Education.* 1st ed. Cambridge, MA: Harvard University Press; 1957: 287.
12. Hammer DP. Professional attitudes and behaviors: The “A’s and B’s” of professionalism. *Am J Pharm Educ.* 2000;64(4):455-464.
13. APhA-ASP/AACP-COD Task Force on Professionalism. White paper on pharmacy student professionalism. *J Am Pharm Assoc.* 2000;40(1):96-102.
14. Porter LW, Lawler EE, Hackman JR. *Behavior in Organization.* New York: McGraw-Hill; 1975.
15. Brian OE, Wheeler S, eds. *Socialization After Childhood.* New York: John Wiley and Sons; 1966.
16. Clausen JA, ed. *Socialization and Society.* Boston: Little, Brown, and Company; 1968.
17. Van Maanen JR. Breaking in: socialization to work. In: Dublin R, ed. *Handbook of Work Organizations and Society.* Chicago: Rand McNally; 1975.
18. Feldman DC. Organization of hospital employees: a comparative view of occupational groups. *Med Care.* 1977;15(10):799-813.
19. Keshishian F, Brocovich JM, R Boone T, Pal S. Motivating factors influencing choice of major: A comparative survey analysis of pharmacy vs. non-pharmacy students. *Am J Pharm Educ.* 2010;74(3):Article 46.
20. U.S. Census Bureau. Diversity index. <http://www.census.gov/population/cen2000/atlas/divers.xls>. Accessed December 3, 2008.
21. Hurtado S, Pryor JH. *The American Freshman: National Norms for Fall 2005.* Los Angeles: Higher Education Research Institute, UCLA; 2006.
22. Cebula RJ, Lopes J. Determinants of student choice of undergraduate major field. *Am Educ Res J.* 1982;19(2):303-312.
23. Berger MC. Predicted future earnings and choice of college major. *Ind & Lab Relations Rev.* 1988;41(3):418-429.
24. Koeppel D. Choosing a college major: for love or for the money? *The New York Times.* December 5, 2004. Available at: http://www.nytimes.com/2004/12/05/jobs/05jmar.html?_r=1&pagewanted=print&position. Accessed April 5, 2010.
25. Jandt FE. *An Introduction to Intercultural Communication: Identities in a Global Community.* 5th ed. Thousand Oaks, CA: Sage Publishing; 2007.
26. Hepler CD, Stand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Pharm Educ.* 1989;53(Suppl):75-155.
27. Beardsley RS. Chair report of the APhA-ASP/AACP-COD task force on professionalism: Enhancing professionalism in pharmacy education and practice. *Am J Pharm Educ.* 1996;60(Suppl):26S-28S.
28. Wood JT. *Interpersonal Communication: Everyday Encounters.* 5th ed. Belmont, CA: Thomson/Wadsworth; 2007.
29. Krathwohl DR, Bloom BS, Masia BB. *Taxonomy of Educational Objectives. The Classification of Education goals. Handbook II: Affective Domain.* White Plains, NY: Longman; 1964.
30. Brown DL, Ferrill MJ, Hinton AB, Shek A. Self-directed professional development: The pursuit of affective learning. *Am J Pharm Educ.* 2001;65(3):240-247.
31. Danielle A, Taylor MPP, Patton JM MLIS. AACP Reports. The pharmacy student population: applications received 2006-07, degrees conferred 2006-07, fall 2007 enrollments. *Am J Pharm Educ.* 2008;72(Suppl):Article S6.
32. Kenreigh CA, Wagner LT. The pharmacist shortage. Medscape. Available at: <http://www.medscape.com/viewarticle/52115>. Accessed December 7, 2008.
33. Malnarich G. The pedagogy of possibilities: Developmental education, college-level studies, and learning communities. Washington Center for Improving the Quality of Undergraduate Education, National Learning Communities Project; 2003.
34. Hofstede G. *Cultures Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations.* 2nd ed. Thousand Oaks, CA: Sage; 2001.
35. Carter LC, Brunson BJ, Hatfield CL, Valuck RJ. Description of an introductory course designed to socialize pharmacy students. *Am J Pharm Educ.* 2000;64(2):166-173.
36. Kearney KR. Instructional design and assessment: a service-learning course for first-year pharmacy students. *Am J Pharm Educ.* 2008;72(4):Article 86.